# *Star*

## Star Overview

Volunteer monitoring began at Star Lake in the 1980s and has continued through 2004, with gaps in 1992 and 1994. The data indicate this lake is relatively low in primary productivity (oligotrophic) with excellent water quality.

Star Lake has a public access boat launch, and the lake has been recently treated for a Eurasian milfoil infestation. Residents should watch aquatic plants growing nearshore to catch remaining patches of this, Brazilian elodea or other aquatic noxious weeds.

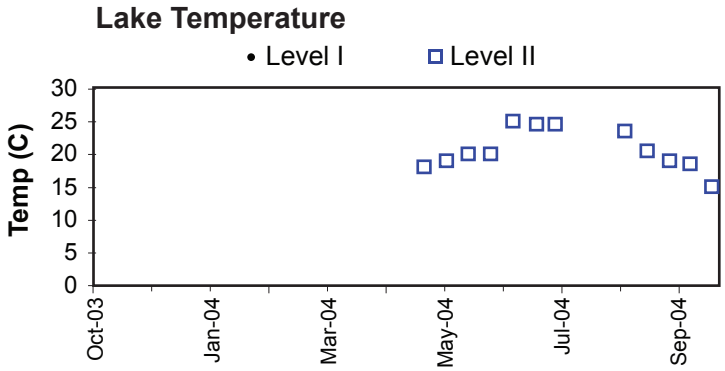
## Physical Parameters

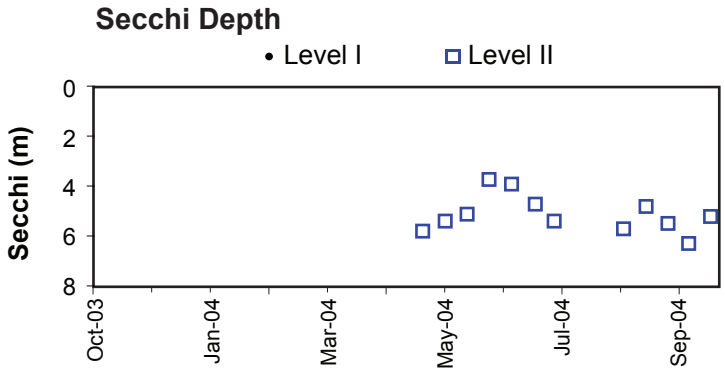
Secchi transparency was measured from April - October, ranging from 3.6 to 6.2 m, averaging 5.0 m which placed it among the upper range of small lakes monitored in 2004. Surface water temperatures reached 25.0 degrees Celsius during the same period, which placed in the mid range for the group.

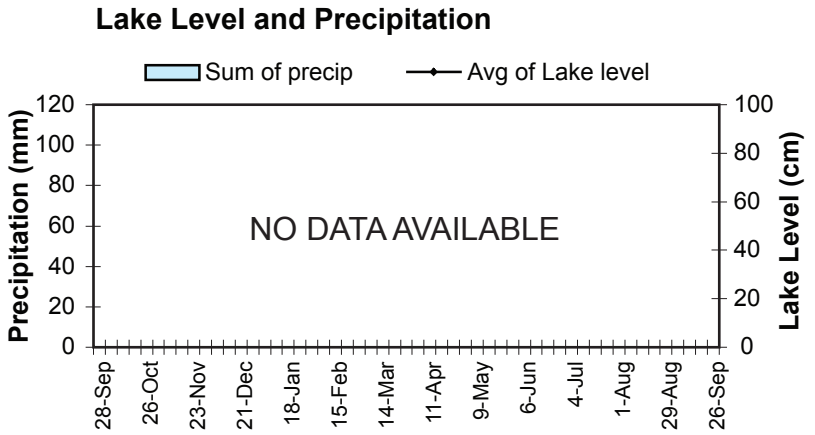
Water level and precipitation observations were not recorded.

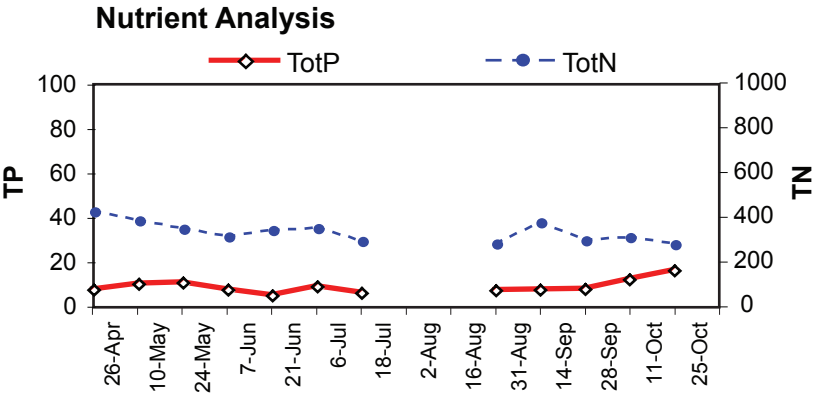
## Nutrient Analysis and TSI Ratings

Total nitrogen decreased slightly through spring and then remained steady, while total phosphorus varied little over the period. The N:P ratio ranged from 33 to 69, averaging 47 which suggested poor conditions for nuisance bluegreen growth.



Profile data indicate that thermal stratification was present early in the season and persisted through the summer. Concentrations of phosphorus in the deep water were high in late May and persisted through summer, suggesting possible accumulation due to sediment release. Chlorophyll data indicated that algae were more abundant in the middle depths of the water column than at 1m.

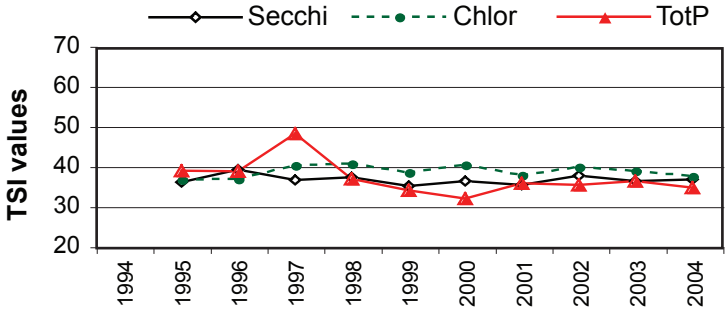
In 2004 the average TSI indicators were fairly close together in the upper range of oligotrophy, similar to recent years.

## Chlorophyll Concentrations and Algae

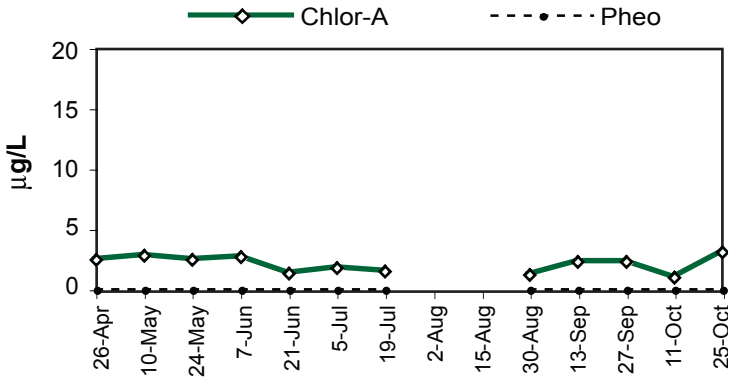
Chlorophyll concentration at 1m remained low through the entire sampling period. Algae in the spring plankton were dominated by an unidentified colonial chlorophyte, followed by the colonial bluegreen *Anacystis*. Other algae found frequently through the sample period included the diatom *Asterionella*, the chlorophyte *Oocystis*, and the colonial bluegreen *Gomphosphaeria*.

| Date | Secchi | depth-m | degC | Chlor-A | TP µg/L | TN µg/L |
|---|---|---|---|---|---|---|
| 5/24/04 | 5.0 | 1 | 20.0 | 2.56 | 10.6 | 352 |
| | | 7 | 12.0 | 7.21 | 10.6 | 437 |
| | | 14 | 7.5 | | 215.0 | 1400 |
| 8/31/04 | 5.6 | 1 | 23.5 | 1.30 | 7.1 | 284 |
| | | 7 | 20.0 | 3.40 | 7.2 | 297 |
| | | 14 | 8.0 | | 220.0 | 2160 |

**TSI Ratings**




**Chlorophyll a Concentrations (ug/L)**




**Common Algae**

| | Group |
|---|---|
| *Anacystis sp* | Cyanobacteria |
| *Asterionella formosa* | Bacillariophyta |
| unidentified colony | Chlorophyta |

# *Star*

## 2004 Level I Data not available

## 2004 Level II Data

| Date (2004) | Temp (°C) | Secchi (m) | Chl-*a* (µg/l) | TP (µg/l) | TN (µg/l) | Algae Obsv. | N:P | Calculated TSI | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Secc | chl-a | TP |
| 26-Apr | 18.0 | 5.7 | 2.56 | 7.5 | 430 | 1 | 57 | 34.9 | 39.8 | 33.2 |
| 10-May | 19.0 | 5.3 | 2.88 | 10.1 | 389 | 1 | 39 | 35.9 | 40.9 | 37.5 |
| 24-May | 20.0 | 5.0 | 2.56 | 10.6 | 352 | 1 | 33 | 36.8 | 39.8 | 38.2 |
| 7-Jun | 20.0 | 3.6 | 2.80 | 7.5 | 317 | 1 | 42 | 41.5 | 40.7 | 33.2 |
| 21-Jun | 25.0 | 3.8 | 1.40 | <detect | 346 | 1 | 69 | 40.7 | 33.9 | 27.4 |
| 6-Jul | 24.5 | 4.6 | 1.90 | 8.8 | 355 | 1 | 40 | 38.0 | 36.9 | 35.5 |
| 18-Jul | 24.5 | 5.3 | 1.60 | 6.0 | 296 | 1 | 49 | 35.9 | 35.2 | 30.0 |
| 2-Aug | | | | | | | | | | |
| 16-Aug | | | | | | | | | | |
| 31-Aug | 23.5 | 5.6 | 1.30 | 7.1 | 284 | 1 | 40 | 35.1 | 33.1 | 32.4 |
| 14-Sep | 20.5 | 4.7 | 2.40 | 7.6 | 380 | 1 | 50 | 37.7 | 39.2 | 33.4 |
| 28-Sep | 19.0 | 5.4 | 2.40 | 7.7 | 300 | 1 | 39 | 35.7 | 39.2 | 33.6 |
| 11-Oct | 18.5 | 6.2 | 1.10 | 12.1 | 314 | 1 | 26 | 33.7 | 31.5 | 40.1 |
| 25-Oct | 15.0 | 5.1 | 3.20 | 16.0 | 282 | 1 | 18 | 36.5 | 42.0 | 44.1 |

| | Temp (°C) | Secchi (m) | Chl-*a* (µg/l) | TP (µg/l) | TN (µg/l) | Algae | N:P | Calculated TSI | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Secc | chl-a | TP |
| **Mean** | 20.6 | 5.0 | 2.2 | 9.2 | 337.1 | 1.0 | 42 | 36.9 | 37.7 | 34.9 |
| **Median** | 20.0 | 5.2 | 2.4 | 7.7 | 331.5 | 1 | 40 | 36.2 | 39.2 | 33.5 |
| **Min** | 15.0 | 3.6 | 1.1 | 6.0 | 282.0 | 1 | 18 | 33.7 | 31.5 | 27.4 |
| **Max** | 25.0 | 6.2 | 3.2 | 16.0 | 430.0 | 1 | 69 | 41.5 | 42.0 | 44.1 |
| **Count** | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |

**TSI Average = 36.5**